REMARKS

Claims 1-7 remain pending in this application. Claims 7-17 and 21-29 are rejected. Claims 26 and 29 are cancelled herein. Claims 1-7 are previously cancelled. Claims 7-25, 27 and 28 are amended herein to clarify the invention. Other formal matters are attended to that were not addressed by the Examiner and accordingly are considered unrelated to substantive patentability issues.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102(b)

Claims 7-10, 13-17 and 21-29 are rejected under 35 U.S.C. § 102(e) as being anticipated by the Zapf '927 reference. Applicant herein respectfully traverses these rejections. "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*" ***Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*** , 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added) . It is respectfully submitted that the cited reference is deficient with regard to the following.

As noted in the prior response, the Zapf '927 reference function based upon an entirely different principle than the claimed invention. The '927 reference uses the principle of the mutual inductance of coupled coils to transfer a signal

from an oscillator 11 to a sensing circuit comprised of amplifier 14, amplitude detector 15 and the evaluation circuit 16. The functioning of the Zapf '937 device is based solely on the sensing of how much signal is coupled from the oscillator 11 and is not based upon the inductance of the respective coils 12 and 13. Instead, it is the mutual inductance of the two coils that is determinative. This concept is explained in the attach excerpt from an engineering handbook, entitled "Inductors." *The Engineering Handbook*, Ed. R. Dorf, (CRC Press 1993), pgs. 24-25. As will be evident from equation 1.42, the mutual inductance M is primarily determinative in how much signal is transferred by coupled coils and is determined by interaction of the coils based on aiding and opposing fields. Further attached is a declaration from one of the present inventors confirming operation of the Zapf '937 device and the present invention.

Each of the independent claims now recites that the switching is accomplished by the change in *self-inductance* of the coil in claim 7 or the respective self-inductances of the respective first and second coils of claim 8. This is clearly supported by the specification as it is only the inductance of the respective coils that is referred and one skilled in the art would only interpret to what is known as the self-inductance of a coil. The claims further state that the self-inductance is predominantly determined by the relative positioning or

distance to the conductive actuator. As explained in the attached declaration , the self-inductance of the coupled coils in the Zapf '937 does not influence the circuit operation. In the attached declaration, the term "counter inductivity" is used due to differing terms of art in German and English. However, another declaration will be submitted during the suspension period wherein this term is clarified as "mutual inductance." Nonetheless, the claims now make clear that the present invention is based on the predominant change in self-inductance which is not the case in the device of the Zapf '937 reference.

In view of the above, it is respectfully submitted that claims 7-10, 13-17 and 21-26, and 28 particularly describe and distinctly claim elements not disclosed in the cited reference. Therefore, reconsideration of the rejections of these claims and their allowance are respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. §103(a)

Claims 11 and 12 are rejected as obvious over the Zapf reference in view of Machul under 35 U.S.C. §103(a). The applicant herein respectfully traverses this rejection.

The above rejections relies on the Zapf reference in combination with the Machul reference. Accordingly, the Zapf reference is only prior art under 35 U.S.C. 102(e). Since the Zapf reference and the present application are

commonly owned, under 35 U.S.C. 103(c) the Zapf is not available as prior art in an obviousness rejection. Accordingly, it is respectfully submitted that the Zapf reference is now removed as prior art to be used in combination with another rendering said rejections moot.

REQUEST FOR EXTENSION OF TIME

Please see concurrently filed Request for Continued Examination.

Docket No. F-8567 Ser. No. 10/527,765

NO FEE DUE

No fee is believed due. An RCE with a request for extension time and the appropriate crtedit card form is provided herewith to cover extension and RCE fees. If there is any further fee due the USPTO is hereby authorized to charge such fee to Deposit Account No. 10-1250.

In light of the foregoing, the application is now believed to be in proper form for allowance of all claims and notice to that effect is earnestly solicited.

Respectfully submitted,
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enc: Form PTO-2038; Request for Continued Examination; Rule 132 Declaration, and PTO 2038 form (Credit Card Payment Form).

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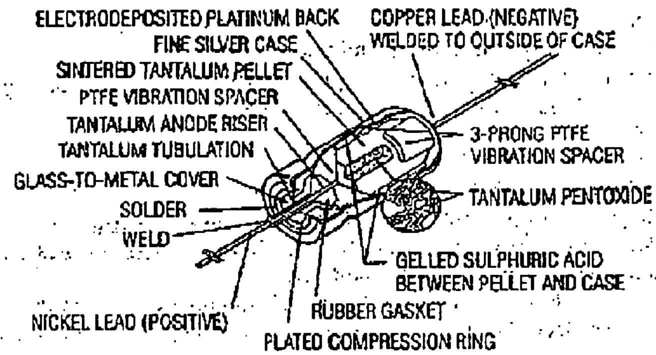

Voltage Range: 6 to 125 WVDC
Capacitance Range: 1.7 to 1200 µF
Size Range: 0.188" dia. x 0.453" long to 0.375" dia. x 1.062" long
Primary Applications: Industrial and military equipment where reliability and premium performance with respect to low d-c leakage current, high inrush current capability, and high volumetric efficiency.

FIGURE 1.19 Hermetically sealed sintered-anode tantalum capacitor. (Courtesy of Sprague Electric Company.)

Wet sintered-anode capacitors, or "wet-slug" tantalum capacitors, are used where low dc leakage is required. The conventional "silver can" design will not tolerate reverse voltage. In military or aerospace applications where utmost reliability is desired, tantalum cases are used instead of silver cases. The tantalum-cased wet-slug units withstand up to 3 V reverse voltage and operate under higher ripple currents and at temperatures up to 200°C (392°F).

Solid-electrolyte designs are the least expensive for a given rating and are used where their very small size is important. They will typically withstand a reverse voltage up to 15% of the rated dc working voltage. They also have good low-temperature performance characteristics and freedom from corrosive electrolytes.

Inductors

Inductance is used for the storage of magnetic energy. Magnetic energy is stored as long as current keeps flowing through the inductor. In a perfect inductor, the current of a sine wave lags the voltage by 90°.

Impedance

Inductive reactance X_L, the impedance of an inductor to an ac signal, is found by the equation

$$X_L = 2\pi f L \tag{1.34}$$

where X_L = inductive reactance, Ω; f = frequency, Hz; and L = inductance, H.

The type of wire used for its construction does not affect the inductance of a coil. Q of the coil will be governed by the resistance of the wire. Therefore coils wound with silver or gold wire have the highest Q for a given design.

To increase inductance, inductors are connected in series. The total inductance will always be greater than the largest inductor.

$$L_T = L_1 + L_2 + \cdots + L_n \tag{1.35}$$

To reduce inductance, inductors are connected in parallel.

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$$L_T = \frac{1}{1/L_1 + 1/L_2 + \cdots + 1/L_n} \tag{1.36}$$

The total inductance will always be less than the value of the lowest inductor.

Mutual Inductance

Mutual inductance is the property that exists between two conductors carrying current when their magnetic lines of force link together.

The mutual inductance of two coils with fields interacting can be determined by the equation

$$M = \frac{L_A - L_B}{4} \tag{1.37}$$

where M = mutual inductance of L_A and L_B, H; L_A = total inductance, H, of coils L_1 and L_2 with fields aiding; and L_B = total inductance, H, of coils L_1 and L_2 with fields opposing.

The *coupled inductance* can be determined by the following equations. In parallel with fields aiding,

$$L_T = \frac{1}{\dfrac{1}{L_1 + M} + \dfrac{1}{L_2 + M}} \tag{1.38}$$

In parallel with fields opposing,

$$L_T = \frac{1}{\dfrac{1}{L_1 - M} - \dfrac{1}{L_2 - M}} \tag{1.39}$$

In series with fields aiding,

$$L_T = L_1 + L_2 + 2M \tag{1.40}$$

In series with fields opposing,

$$L_T = L_1 + L_2 - 2M \tag{1.41}$$

where L_T = total inductance, H; L_1 and L_2 = inductances of the individual coils, H; and M = mutual inductance, H.

When two coils are inductively coupled to give transformer action, the coupling coefficient is determined by

$$K = \frac{M}{\sqrt{L_1 L_2}} \tag{1.42}$$

where K = coupling coefficient; M = mutual inductance, H; and L_1 and L_2 = inductances of the two coils, H.

An inductor in a circuit has a reactance equal to $j2\pi fL$ Ω. Mutual inductance in a circuit has a reactance equal to $j2\pi fM$ Ω. The operator j denotes that the reactance dissipates no energy; however, it does oppose current flow.

The energy stored in an inductor can be determined by the equation

$$W = \frac{LI^2}{2} \tag{1.43}$$

where W = energy, J (W · s); L = inductance, H; and I = current, A.